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#398943 v1 - A34584-A-PCT-USA Sequence Listing

SEQUENCE LISTING

<110> Fisher, Paul B.
Leszczyniecka, Magdalena

<120> GENES DISPLAYING ENHANCED EXPRESSION DURING CELLULAR SENESENCE AND TERMINAL
CELL DIFFERENTIATION AND USES THEREOF

<130> A34584-A-PCT-USA (070050.1664)

<140> PCT/US00/02920

<141> 2000-02-02

<150> US 09/243,277

<151> 1999-02-02

<160> 51

<170> FastSEQ for windows Version 4.0

<210> 1

<211> 674

<212> DNA

<213> Homo sapiens

<220>

<221> unsure

<222> 534, 590

<223> a or g or c or t

<400> 1

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| gcctttttga | agaaactcca | cgaagaggaa | atccaggagc | tgcaggctca | gattcaggaa | 120 |
| cagcatgtcc | aaatcgatgt | ggatgtttcc | aagcctgacc | tcacggctgc | cctgcgtgac | 180 |
| gtacgtcagc | aatatgaaa | tgtggctgcc | aagaacctgc | aggaggcaga | agaatggtac | 240 |
| aaatccaagt | ttgctgacct | ctctgaggct | gccaaaccgga | acaatgacgc | cctgcgccag | 300 |
| gcaaagcagg | agtccactga | gtaccggaga | cagggtgcagt | ccctcacctg | tgaagtggat | 360 |
| gcccttaaa | gaaccaatga | gtccctggaa | cgccagatgc | gtgaaatgga | agagaacttt | 420 |
| gccgttgaag | ctgctaacta | ccaagacact | attggcccgc | ctgcaggatg | agattcagaa | 480 |
| tatgaaggag | gaaatggctc | gtcaccttcg | tgaataccaa | gacctgctca | atgntaagat | 540 |
| ggcccttgac | attgagattg | ccacctacag | gaagctgctg | ggaaggcgan | gagagcagga | 600 |
| tttctctgct | cttccaaact | tttcctcctt | gaccttgagg | gaaactaatc | tggattcact | 660 |
| ccctcttggg | tgaa | | | | | 674 |

<210> 2

<211> 678

<212> DNA

<213> Homo sapiens

<220>

<221> unsure

<222> 566, 669

<223> a or g or c or t

<400> 2

| | | | | | | |
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| tgtttgaagt | gagtcttgct | gatttgcaga | atgatgaagt | tgcattagaa | aattcaagct | 120 |
| gattactgaa | gatgttcagg | gtaaaaactg | cctgactaac | ttccatggca | tggatcttac | 180 |
| ccgtgacaaa | atgtgttcca | tgggtcaaaaa | atggcagaca | atgattgaag | ctcacgttga | 240 |
| tgtcaagact | accgatgggt | acttgcttcg | tctgttctgt | gttggtttta | ctaaaaaacg | 300 |
| caacaatcag | atacgggaaga | cctcttatgc | tcagaccacaa | cagggtccgcc | aaatccggaa | 360 |

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| | | | | | | |
|------------|------------|------------|------------|------------|-------------|-----|
| gaagatgatg | gaaatcatga | cccgagaggt | gcagacaaat | gacttgaaag | aagtgggtcaa | 420 |
| taaattgatt | ccagacagca | ttggaaaaga | catagaaaag | gcttgccaat | ctatttatcc | 480 |
| tctccatgat | gtcttcgita | gaaaagtaaa | aatgctgaag | aagcccaagt | ttgaattggg | 540 |
| aaagctcatg | gagcttcatg | gtgaanggca | gtagtctctg | aaaaagccac | ttggggacga | 600 |
| aacaggtgct | aaaagtttga | acgactgatg | gatattgaac | cccagtccaa | gaatctggtt | 660 |
| aaaggtcana | cttcaaat | | | | | 678 |

<210> 3
 <211> 670
 <212> DNA
 <213> Homo sapiens

 <220>
 <221> unsure
 <222> 656
 <223> a or g or c or t

| | | | | | | |
|------------|------------|-------------|------------|------------|-------------|-----|
| <400> 3 | | | | | | |
| aattcggcac | gaggatgatg | accttcaaga | aaatgaagac | aataaacaac | ataaagaaag | 60 |
| cttgaaaaga | gtgacctttg | ctttaccaga | tgatgcggaa | actgaagata | cagggtgtttt | 120 |
| aaatgtaaa | aaaaattctg | atgaagttaa | atccttcctt | gaaaaaagac | aggaaaagat | 180 |
| gaatgaaaaa | attgcatctt | tagaaaaaga | gttgttagaa | aaaaagccgt | ggcaacttca | 240 |
| gggggaagt | acagcacaga | agaggccaga | gaacagcctc | ctggaggaga | ccctacactt | 300 |
| tgaccatgct | gtccggatgg | cacctgtgat | tacagaggaa | accacccttc | aactggaaga | 360 |
| tatcattaaa | cagaggataa | gagatcaggc | ttgggatgat | gtagtacgta | aagaaaaacc | 420 |
| taaagaggat | gcatatgaat | ataaaaagcg | tttaacctta | gaccatgaga | agagtaaatt | 480 |
| gagccttgct | gaaatttatg | aacaggagta | catcaaaact | aaccagcaaa | aaacagcaga | 540 |
| agaagaaaaa | ccagaacatg | tagaaaattca | gaagatgatg | gattccctct | tcttaaattg | 600 |
| gatgcctctc | aaacttccct | ttatccctta | accgcctgtc | cagagattaa | agttgngggc | 660 |
| aatctgcca | | | | | | 670 |

<210> 4
 <211> 675
 <212> DNA
 <213> Homo sapiens

 <220>
 <221> unsure
 <222> 530, 534, 650, 651, 655
 <223> a or g or c or t

| | | | | | | |
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| <400> 4 | | | | | | |
| aattcggcac | gagatctgct | gcaagcagcc | aaatgttatg | agaaggaact | gggccgcctg | 60 |
| ctaagggatg | ccccttcagg | cataggcagt | attttcctgt | cagcatctga | gcttgaggat | 120 |
| ggtagtgaag | aaatgggcca | gggcgagtc | agctccagtc | ccagagagct | cctctctaac | 180 |
| tcagagcaac | tgaactgaga | cagaggagga | aaacagagca | tcagaagcct | gcagtgggtg | 240 |
| ttgtgacggg | taggaggata | ggaagacagg | gggccccaac | ctgggattgc | tgagcaggga | 300 |
| agctttgcat | gttgctctaa | ggtacatttt | taaagagtgt | ttttttggcc | gggcgagtg | 360 |
| gctcatgcct | gtaatcccag | cactttggga | ggccgaggtg | ggcggatcac | gagggtctgga | 420 |
| gtttgagacc | atcctggcta | acacagtga | atcccgtctc | tactaaaaat | acaaaaaatt | 480 |
| agccaggcgt | ggtggctggc | acctgtagtc | ccagctactt | gggagctgan | gcangagaat | 540 |
| ggcgtgaacc | tgggaaggaa | aagttagcagg | tgagcccaag | attgcgcccc | cttgcactcc | 600 |
| agctgggcaa | cagagcaaga | cttcatctca | aaaaaaaaaa | aaaaaaactn | ncgngggggg | 660 |
| gcccccgggc | ccccca | | | | | 675 |

<210> 5
 <211> 460
 <212> DNA
 <213> Homo sapiens

 <220>
 <221> unsure
 <222> 411, 412, 415, 416, 423, 430, 433, 439, 442, 446, 452, 454,

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456, 457

<223> a or g or c or t

<400> 5

| | | | | | | |
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| aattcggcac | gagcacctct | gtgtctacca | tgacccccctt | cctcacactg | acctgtgttc | 60 |
| cttcccgtgt | ctcttttcta | ttaaaaataa | gaacctgggc | agagtgcggc | agctcatgcc | 120 |
| tgtaatccca | gcacttaggg | aggccgagga | gggcagatca | cgaggtcagg | agatcgaaac | 180 |
| catcctggct | aacacggtga | aacccccgtct | ctactaaaaa | atacaaaaaa | ttagctgggc | 240 |
| gcagaggcac | gggcctgtag | tcccagctac | tcaggaggcg | gaggcaggag | aatggcgta | 300 |
| acccgggagg | cggagggtgc | agtgagccag | gattgtgcga | ctgcactcca | gcctgggtga | 360 |
| cagggtgaaa | cgccatctca | aaaaataaaa | attaaaaaaa | aaaaaaaaaa | nntcnngggg | 420 |
| ggncccggtn | ccnatttcnc | cntatnngga | gncntnncaa | | | 460 |

<210> 6

<211> 445

<212> DNA

<213> Homo sapiens

<400> 6

| | | | | | | |
|------------|------------|------------|------------|-------------|------------|-----|
| aattcggcac | gagttctgcc | catgctgcag | acagtggcca | agaacaagga | ccagggcacc | 60 |
| tatgaggatt | atgtcgaagg | acttcgggtg | tttgacaagg | aaggaaatgg | caccgtcatg | 120 |
| ggtgctgaaa | tccggcatgt | tcttgtcaca | ctgggtgaga | agatgacaga | ggaagaagta | 180 |
| gagatgctgg | tggcagggca | tgaggacagc | aatggttgta | tcaactatga | agagctcgtc | 240 |
| cgcatgggtg | tgaatggctg | aggaccttcc | cagtctcccc | agagtccgtg | cctttccctg | 300 |
| tgtgaatttt | gtatctagcc | taaaagtttc | ctaggctttc | ttgtctcagc | aactttccca | 360 |
| tcttgtctct | cttggatgat | gtttgccgtc | agcattcacc | aaataaaactt | gctctctggg | 420 |
| ccctcggaag | aaaaaaaaaa | aaaaa | | | | 445 |

<210> 7

<211> 666

<212> DNA

<213> Homo sapiens

<220>

<221> unsure

<222> 483, 498, 527

<223> a or c or g or t

<400> 7

| | | | | | | |
|-------------|------------|-------------|-------------|-------------|------------|-----|
| aattcggcac | gaggcaatgt | gcttgggtttt | aaagaaattc | tccttgggaa | aaaagtatcc | 60 |
| tcttttaatt | ttacttccca | taagcgtaaa | tgacctggaca | tagctcttgt | gcaaccttta | 120 |
| aataaattgt | tttgagtgtt | ttttgagccc | cagacaaata | atgttttaaa | gttatcccct | 180 |
| tgctacttta | ctgataacct | tatcattcct | gagacagttt | gctaatttaa | aaatgtagca | 240 |
| ttccatttgt | atttatattt | ctcccctggc | aaaaagattt | tctaatactg | cttgtaccag | 300 |
| ccagagaaaag | atccaaaaca | ctactcagct | ctcttgact | gaggaaaattt | ttccccctac | 360 |
| attgactcct | ggcctacatc | agccaaaactt | aaccttggtg | gggtttggat | ttgatagcca | 420 |
| attagttctg | tgctggttgc | aaagaattga | tatttagatg | gtttttaata | ctcagcagat | 480 |
| tgnccttcctt | tataatgngt | cttttttatg | ttgcatgttg | cttttgntat | cagcctgatt | 540 |
| ttttgtctcag | tatatgatag | ttctgtctgat | ggtttggtta | ttgggcagac | atatcttcat | 600 |
| taagagtttt | tggaaaactc | atcaaattcg | atgaatacat | tttcttcata | acccattgga | 660 |
| aataatc | | | | | | 666 |

<210> 8

<211> 409

<212> DNA

<213> Homo sapiens

<400> 8

| | | | | | | |
|------------|-------------|------------|------------|------------|------------|-----|
| aattcggcac | gagcgactac | ggcggactaa | tcttcaactc | ctacatactt | ccccattat | 60 |
| tcctagaacc | agggcgacctg | cgactccttg | acgttgacaa | tcgagtagta | ctcccgattg | 120 |
| aagccccctt | tcgtataata | attacatcac | aagacgtctt | gcactcatga | gctgtcccca | 180 |
| cattaggctt | aaaaacagat | gcaattcccc | gacgtctaaa | ccaaaccact | ttcaccgcta | 240 |
| cacgaccggg | ggtatactac | ggtcaatgct | ctgaaatctg | tggagcaaac | cacagtttca | 300 |

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tatagcaccc cctctacccc ctctagagca aaaaaaaaaa aaaaaaaaaa 409

<210> 9
<211> 667
<212> DNA
<213> Homo sapiens

<220>
<221> unsure
<222> 436, 663
<223> a or c or g or t

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agagggcaga acagagaaaa gctagacaaa atgataagat cagccatatt tcattttgaa 120
tctgcagtgg aaaaaaagcc cacatttgag gtggctcatc tagacctggc aagaatgtat 180
atagaagcag gcaatcacag aaaagctgaa gagaattttc aaaaattggt atgcatgaaa 240
ccagtggtag aagaaacaat gcaagacata catttccact atggctcgggt tcaggaattt 300
caaaagaaat ctgacgtcaa tgcaattatc cattatttaa aagctataaa aatagaacag 360
gcatcattaa caagggataa aagtatcaat tctttgaaga aattgggttt aaggaaactt 420
cggagaaagg cattanactg gaaagcttga gcctccttgg gtctcgtctac aaattggaag 480
gaaatatgaa tgaagccctg gagtactatg agcgggccct gagactggct gctgactttg 540
agactctgtg agacaaggct cttagcccca gatatcagcc ctttccattt catttcattt 600
tatgctaaca ttactaatc atcttttctg cttactgggt tcagaacctt ataattccct 660
ggnatga 667

<210> 10
<211> 672
<212> DNA
<213> Homo sapiens

<220>
<221> unsure
<222> 585
<223> a or c or g or t

<400> 10
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cttcccccaa atctgatgga cctagaagtc tgcttttgta cctgctgggc cccaaagtgt 120
ggcatttttc tctctgttcc ctctcttttg aaaatgtaaa ataaaaccaa aaatagacaa 180
ctttttcttc agccattcca gcatagagaa caaaccttat ggaaacagga atgtcaattg 240
tgtaatcatt gttctaatta ggtaaataga agtccttatg tatgtgttac aagaatttcc 300
cccacaacat cttttatgac tgaagttcaa tgacagtttg tgtttgggtg taaaggattt 360
tctccatggc ctgaattaag accattagaa agcaccaggc cgtgggagca gtgaccatct 420
gctgactgtt cttgtggatc ttgtgtccag ggacatgggg tgacatgcct cgtatgtgtt 480
agaggggtgga atggatgtgt ttggcgctgc atgggatctg gtgcccctct tctcctggat 540
tcacatcccc acccagggcc cggttttact aagtgtctgc cctanattgg gtcaaaggag 600
gtcatccaac tgactttatc aagtggaatt gggatatatt tgatatactt ctggctaaca 660
acatgggaaa ag 672

<210> 11
<211> 672
<212> DNA
<213> Homo sapiens

<220>
<221> unsure
<222> 585
<223> a or c or g or t

<400> 11
aattcttcct gtacgattgg ggatataacg ggcttcacta accttcccta ggcattgaaa 60

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cttcccccaa atctgatgga cctagaagtc tgcttttcta cctgctgggc cccaaagtgt 120
ggcatttttc tctctgttcc ctctcttttg aaaatgtaaa ataaaaaccaa aaatagacaa 180
ctttttcttc agccattcca gcatagagaa caaaccttat ggaaacagga atgtcaattg 240
tgtaatcatt gttctaatta ggtaaataga agtccttatg tatgtgttac aagaatttcc 300
cccacaacat cctttatgac tgaagttaa tgacagtttg tgtttggtgg taaaggattt 360
tctccatggc ctgaattaag accattagaa agcaccaggc cgtgggagca gtgaccatct 420
gctgactgtt ctgtggatc ttgtgtccag ggacatgggg tgacatgcct cgtatgtgtt 480
agaggggtga atggatgtgt ttggcgctgc atgggatctg gtgcccctct tctcctggat 540
tcacatcccc acccagggcc cggttttact aagtgtctgc cctanattgg gtcaaaggag 600
gtcatccaac tgactttatc aagtggaaatt gggatatatt tgatatactt ctggctaaca 660
acatgggaaa ag

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<210> 12
 <211> 669
 <212> DNA
 <213> Homo sapiens

<220>
 <221> unsure
 <222> 587, 595, 600, 660, 662
 <223> a or c or g or t

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<400> 12
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tgaaaggcca gaatgaggaa gccctgaaga gcttaaaaga agctgaaaac ttaatgcagg 120
aagaacatga caaccaagca aatgtgagga gtctggtgac ctggggcaac tttgcctgga 180
tgtattacca catgggcaga ctggcagaag ccagactta cctggacaag gtggagaaca 240
tttgcaagaa gctttcaaat cccttcgct atagaatgga gtgtccagaa atagactgtg 300
aggaaggatg ggccttgctg aagtgtggag gaaagaatta tgaacgggcc aaggcctgct 360
ttgaaaaggt gcttgaagtg gaccctgaaa accctgaatc cagcgctggg tatgcgatct 420
ctgcctatcg cctggatggc tttaaattag ccacaaaaaa tcacaagcca ttttctttgc 480
ttcccctaag gcaggctgtc cgcttaaatc cagataatgg atatattaag ggtctccttg 540
ccctgaagct tcaggatgaa ggacaggaaa cttgaaggag aaaagtncat tgaanaactn 600
taccaccat gtccctccaga cctatgcttt gattgcagcc aagttttacc gaaaaaaagn 660
tntgggata

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<210> 13
 <211> 702
 <212> DNA
 <213> Homo sapiens

<220>
 <221> unsure
 <222> 530, 585, 600, 616, 654, 702
 <223> a or c or g or t

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<400> 13
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aagacaagaa aattaatgaa gaactggagt ctcaatatca gcaaagtatg gacagtaaat 120
tatcaggaag atatcggcga cattgtggac ttggcttcag tgaggtagaa gaccatgatg 180
gagaagggtga tgtggctgga gatgatgatg atgacgatga tgattcacct gatcctgaaa 240
gtccagatga ttctgaaagc gattcagagt cagagaaaaga agaactctgct gaagaactcc 300
aagctgctga gcaccctgat gaagtggagg atcccaaaaa caaaaaagat gcaaaaaagca 360
attataaaaat gatgtttgtt aaatccagtg gttcataact cccaaacgct tagtctttgt 420
attaaaagta agccttattg ttacaatgca cagtggagga ctgcttatag agcacagacc 480
tttgattatt aatttttaaa aaggcccttt taaataatta caaagagtgn ttgctttcaa 540
atgccatggg ttacactttt atgggcatga ctataccatt tttgnaaaga gtagagttn 600
ataaaaataag aaatanntcc agtactcact tccttctatt agcatctcac cctntaatc 660
ccttatgggg aaatgcttct tttggttggg atagcttttt an 702

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<210> 14
 <211> 312
 <212> DNA

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<213> Homo sapiens

<400> 14

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aattcggcac gaggtaaatg ttgagccttt ttggcctggc ttgtttgcaa aggccctggc 60
caacgtcaac attgggagcc tcatctgcaa tgtagggggc ggtggacctg ctccagcagc 120
tggtgctgca ccagcaggag gtcctgcccc ctccactgct gctgctccag ctgaggagaa 180
gaaagtggaa gcaaagaaag aagaatccga ggagtctgat gatgacatgg gctttgggtct 240
ttttgactaa acctctttta taacatgttc aataaaaaagc tgaactttta aaaaaaaaaa 300
aaaaaaaaaa ac 312
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<210> 15

<211> 391

<212> DNA

<213> Homo sapiens

<400> 15

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cgctggtttt cctcaaggct ctctgatggg tctaacttgg taggatccac ttcaaagcta 120
acatgttgcc aatcagagga tgtgatcaca attcgttaata aaggatccag gagtttttgt 180
agataggtag caccatatac cttgaaacag aatgtcatta ttttactggc caagctgttg 240
cctcgggaaga gagtctgcat ggagtctgcc aattctactt ctttagaaaa catgttccag 300
agcagttggg agagtaaatg ccgagaatca aacagagtaa ccagaactcg aggggggggccc 360
cggtagcccaa ttcgccctat agtgagtcgt t 391
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<210> 16

<211> 720

<212> DNA

<213> Homo sapiens

<220>

<221> unsure

<222> 6, 7, 359, 383, 449, 456, 459, 473, 501, 504, 515, 518, 528,
532, 535, 538, 549, 562, 567, 568, 577, 579, 601, 603

<223> a or c or g or t

<221> unsure

<222> 614, 618, 621, 625, 633, 636, 641, 678, 683, 691, 708

<223> a or c or g or t

<400> 16

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ccatcttgag gatgtagggg attatgctgt ctatcgaaac attgccaatg agaccagtaa 180
aaaaaagttc ttctgttatg ttggagctca tcagcctgag tgccggcagg cgaacgagga 240
tccgggcca tctataaaag ggagtgtcat tagaaaagga gactgtttga tgcccttcaa 300
ccacagctca gcaaaggctc ctgggggtccc gtctgtattg caccagaatc aaaccaacng 360
gatccacctt ccacccacct ttnttttctg atttcaacag ttcctcttat agaaatttat 420
catgagaaaa aaccaaata gaacaaaang tatgtncana tgggttcctt tcnctctggt 480
aatccaactt tcctaacccc nccnccaaaa aaaanctngg aattcttnac cngngngnca 540
ccttaaggng gaagccttca tnggaannac ttgctanana ctcatthaaa aaaccgatta 600
ntnccaaccc tgnnttttnt gncccnggaa aanacntccc ntgacatatg gctcaaataa 660
aaggttttta aggggaantt ttnaaaaaaa anaiaaaaaaa aaaccctngg ggggggggcc 720
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<210> 17

<211> 205

<212> DNA

<213> Homo sapiens

<220>

<221> unsure

<222> 158, 159, 161, 163, 176, 182, 186, 189, 191, 193, 197, 1699,
200, 202, 203

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<223> a or c or g or t

<400> 17

| | | | | | | |
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| cttcctacca | ctcaccctag | cattacttat | atgatatgtc | tccataccca | ttacaatctc | 120 |
| cagcattccc | cctcaaacct | aaaaaaaaaa | aaaaaaaaant | ngnggggggg | cccgncccc | 180 |
| anttcncnt | ntngggngnn | gnntt | | | | 205 |

<210> 18

<211> 691

<212> DNA

<213> Homo sapiens

<220>

<221> unsure

<222> 479

<223> a or c or g or t

<400> 18

| | | | | | | |
|------------|-------------|------------|-------------|------------|------------|-----|
| aattcttaca | tgttttcttt | gctttaagtg | taactggcag | ttttccattg | gtttacctgt | 60 |
| gaaatagttc | aaagccaagt | ttataataca | ttataatcagt | cctctttcaa | aggtagccat | 120 |
| catggatctg | gtaggggggaa | aatgtgtatt | ttattacatc | tttcacattg | gctattttaa | 180 |
| gacaaagaca | aattctgttt | cttgagaaga | gaatattagc | tttactgttt | gttatggctt | 240 |
| aatgacacta | gctaataatca | atagaaggat | gtacatttcc | aaattcaca | gttgtgtttg | 300 |
| atatccaaag | ctgaatacat | tctgctttca | tcttggtcac | atacaattat | ttttacagtt | 360 |
| ctcccaaggg | agttaggcta | ttcacaacca | ctcattcaaa | agttgaaatt | aaccatagat | 420 |
| gtagataaac | tcagaaattt | aattcatgtt | tcctaaatgg | gctactttgt | cctttttgnt | 480 |
| attaggggtg | tatttagtct | attagccaca | aaattgggaa | aggagtagaa | aaagcagtaa | 540 |
| ctgacaactt | gaataataca | ccagagataa | tatgagaatc | agatcatttc | aaaactcatt | 600 |
| tcctatgtaa | ctgcattgag | aactgcatat | gtttcgctga | tatatggggt | tttccatttg | 660 |
| cgaatgggtc | cattctctct | ccggactttt | t | | | 691 |

<210> 19

<211> 483

<212> DNA

<213> Homo sapiens

<400> 19

| | | | | | | |
|------------|------------|------------|------------|------------|-------------------------|-----|
| tctagaacta | gtggatcccc | cgggctgcag | gaattcggca | cgaggtttta | agta ct ctga | 60 |
| aattgatctg | tgatcaataa | tactaatatg | ttatctttta | ccgtattctg | cctctcacta | 120 |
| ttgattttaa | ttagttagga | gtatttgagc | tgttatttct | tgagcttaat | atttttttag | 180 |
| agttaactct | ttaaggagat | aatcatggct | gtagacaagg | ccagggctgg | ctgacgtgcc | 240 |
| ttagaaagtt | tgaatgcaat | aaagcgggtg | ttggcggtct | cctgcattgt | agtgcggggt | 300 |
| acaaatgcta | attgttccgt | caactgggtg | cagcagatga | gccgccact | acagacggct | 360 |
| actgcccagg | gacctgcccc | ggccccaccc | aagggtctcc | aagggttgag | atttctgcag | 420 |
| acctatagcc | agcacactta | gtcctgccct | atatagagtt | cctcttcggg | aagcttttga | 480 |
| taa | | | | | | 483 |

<210> 20

<211> 589

<212> DNA

<213> Homo sapiens

<220>

<221> unsure

<222> 556, 558, 587

<223> a or c or g or t

<400> 20

| | | | | | | |
|------------|------------|------------|------------|------------|------------|-----|
| gcacgagtcg | aaatgtacat | tggtgattct | gaagcttata | tcggagcaga | cattaaagac | 60 |
| aaattaaaa | gttatgactt | tgatgtgcat | acaatgaaga | cactaaaaaa | cattatttca | 120 |
| cctccgtggg | atttcagggg | atttgaagta | gaaaaacaga | ctgcagaaga | aacggggctt | 180 |
| acgccattgg | aaacctcaag | gaaaactcca | gattccagac | cttccttgga | agaaaccttt | 240 |

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```

gaaattgaaa tgaatgaaag tgacatgatg ttagagacat ctatgtcaga ccacagcacg 300
tgactccagt cagtggctct ggtcccactg tcccagtgta ggtagtatt ccttcacatc 360
ctctccatgg cttaagaatg tcccacttcc taacgtgact ccaaactgca tctctacatt 420
taggaacaga gacccgcctt aagagactgg atcgcacacc ttgcaacag atgtgttctg 480
atttcttgaa cctacaaaat agttatacat agtggataaa agaaggtaaa ccatcaaaaa 540
aaaaaaaaaa aaaccncngg gggggcccg gccaatttg cccttangg 589

```

<210> 21
 <211> 713
 <212> DNA
 <213> Homo sapiens

<220>
 <221> unsure
 <222> 389, 396, 400, 409, 418, 429, 463, 468, 520, 556, 575, 591,
 594, 613, 635, 641, 650, 666, 680, 682, 700, 704
 <223> a or c or g or t

```

<400> 21
aattcaagtg cctgattaat tgaggtggca acatagtttg agacgagggc agagaacagg 60
aagatacata gctagaagcg acgggtacaa aaagcaatgt gtacaagaag actttcagca 120
agtatacaga gagttcacct ctactctgcc ctccctcatag tcataatgta gcaagtaaag 180
aatgagaatg gattctgtac aatacactag aaaccaacat aatgtatttc tttaaacct 240
gtgtgaaaaa ataaatgttc caccagtagg gataggggaa aagtaaccaa aagagagaaa 300
gagaaaggaa tgctggttta tctttgtaga ttgtaatcga atggagaaat ttgcagtatt 360
ttagccacta ttaggaattt ttttttttng taaaangaan actgaactnt gticaaangc 420
tttcatganc ctggtttgaa acggtaggaa agcaccaaaa cnggggancc tggggactaa 480
gggcctgggtg caaggacttg ggaaatggca ttgataatan atgggggggt tttccccct 540
ttaaaaatgt tggatnttaa gggatataac ccttntttta ctccgaaaat nttntgagaa 600
atcccaaaat tcncggtatg cttggaacca ttganatttt ntagggaaan gccttgaata 660
gcctanacct caaagttggn gngaaccaa attggagccn ttgncccacc tcc 713

```

<210> 22
 <211> 480
 <212> DNA
 <213> Homo sapiens

```

<400> 22
cggcacgaga agaagtggta caggaggaat ttgtgatgat gagctgatct taatcaaaaa 60
tactaaggct cgtacgtctg catcgattat cttacgtggg gcaaatgatt tcatgtgtga 120
tgagatggag cgctctttac atgatgcact ttgtgtagtg aagagagttt tggagtcaaa 180
atctgtggtt cccggtgggg gtgctgtaga agcagccctt tccatatacc ttgaaaacta 240
tgcaaccagc atgggggtctc ggggaacagct tgcgattgca gagtttgcaa gatcacttct 300
tgttattccc aatacactag cagttaatgc tgcccaggac tccacagatc tggttgcaaa 360
attaagagct ttccataatg agggccaggt taaccagaa cgtaaaaatc taaaatgatt 420
ggtcttgatt tgagcaatgg taaacctcga gggggggccc ggtacccaat tcgccctata 480

```

<210> 23
 <211> 198
 <212> DNA
 <213> Homo sapiens

<220>
 <221> unsure
 <222> 21
 <223> a or c or g or t

```

<400> 23
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tctttgttta acaaacctatg catttaagtt taagtgaagt caacaaaaag gaaataggtg 120
tatggatatg tgattttgag attaaagtta gtcttaaaat gtaaaaaaaa aaaaaaaaaa 180
aaaaaaaaaa aaaaaaaaaa

```


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<210> 24
 <211> 414
 <212> DNA
 <213> Homo sapiens

<220>
 <221> unsure
 <222> 368, 370, 372, 374, 375, 376, 377 383, 386, 389
 <223> a or c or g or t

<400> 24
 aattcggcac gagaaaagca gtataactgc ctgacacagc gggattgaac gagagaagaa 60
 attgttcggtt attgctcaga aaattcaaac acgcaaagat cttatggata aaactcagaa 120
 agtgaagggtg aagaaagaaa cgggtgaactc cccagctatt tataaatttc agagtcgtcg 180
 aaaacggttg cgtgttatag ataagccttg tcattctgta tcaaaaatct gttgtcgttt 240
 tctagtaact tcaaattcca ttactccaaa tggcatgggtt ttccggtttg taaccataac 300
 taaattgtca gtctgacatt taatgtcttt ctatggacaa cattaaatct cctcccttc 360
 tgtagaanan anannnnaaa aanccnccng gggggggccg ggtccccatt cccc 414

<210> 25
 <211> 367
 <212> DNA
 <213> Homo sapiens

<400> 25
 aattcggcac gagaaaagca gtataactgc ctgacacagc gggattgaac gagagaagaa 60
 attgttcggtt attgctcaga aaattcaaac acgcaaagat cttatggata aaactcagaa 120
 agtgaagggtg aagaaagaaa cgggtgaactc cccagctatt tataaatttc agagtcgtcg 180
 aaaacggttg cgtgttatag ataagccttg tcattctgta tcaaaaatct gttgtcgttt 240
 tctagtaact tcaaattcca ttactccaaa tggcatgggtt ttccggtttg taaccataac 300
 taaattgtca gtctgacatt taatgtcttt ctatgggaca acattaaatc tccctccctt 360
 ctgtaaa 367

<210> 26
 <211> 432
 <212> DNA
 <213> Homo sapiens

<220>
 <221> unsure
 <222> 386, 389, 390, 397, 404, 409, 413, 416, 424, 426, 430
 <223> a or c or g or t

<400> 26
 aattcggcac gaggcagact tgaaacagtt ctgtctgcag aatgctcaac atgaccctct 60
 gctgactgga gtatcttcaa gtacaaatcc cttcagacct cagaaagtct gttccttttt 120
 gtagtaaaat gaatctttca aagggtttccc aaaccactcc ttatgatcca gtgaatattc 180
 aagagagcta catttgaaagc ctgtacaaaa gcttatccct gtaacacatg tgccataata 240
 tacaaacttc tactttcgtc agtccttaac atctacctct ctgaattttc atgaattttc 300
 atttcacaag ggtaattggt ttatatacac tggcagcagc atacaataaa acttagtatg 360
 aaactttaaa aaaaaaaaaa aaaacntcnn ggggggnccc ggancccant tcncntata 420
 gggngnccgn tt 432

<210> 27
 <211> 398
 <212> DNA
 <213> Homo sapiens

<220>
 <221> unsure
 <222> 288, 298, 345, 348, 352, 357, 358, 368
 <223> a or c or g or t

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<400> 27
aattcggcac gagtaca aaa ccagttgggtg gtgacaagaa cggcgggtacc cgggttggtta 60
aacttcgcaa aatgcctaga tattatccta ctgaagatgt gcctcgaaaag ctgttgagcc 120
acggcaaaaa acccttcagt cagcacgtga gaaaactgcg agccagcatt acccccggga 180
ccattctgat catcctcact ggacgccaca ggggcaagag ggtgggtttc ctgaagcagc 240
tggctagtgg cttattactt gtgactggac ctctgggtcct caatcgantt cctctacnaa 300
gaacacacca gaaatttgtc attgccactt caaccaa aat cgatntcngc antgtannaa 360
atcccaanac atcttactga tgcttacttc aagatgaa 398

<210> 28
<211> 232
<212> DNA
<213> Homo sapiens

<400> 28
aattcggcac gagattgtat cggttttata ttacctgttc tgcttcacca ggagatcatg 60
ctgctgtgat actgagtttt ctaaacagca taaggaagac ttgctcccct gtcctatgaa 120
agagaatagt tttggagggg agaagtggga caaaaaagat gcagttttcc tttgtattgg 180
gaaatgtgaa aataaaaattg tcaactcttt caaaaaaaaaa aaaaaaaaaa aa 232

<210> 29
<211> 539
<212> DNA
<213> Homo sapiens

<220>
<221> unsure
<222> 495, 508, 511, 526, 529
<223> a or c or g or t

<400> 29
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tttaggtatc tttctgaagt ggcattctgga gacaacaaac aaaccactgt gtcgaactcc 120
cagcaggctt accaggaagc atttgaaatt agtaagaaaag aaatgcagcc tacacaccca 180
attcgtcttg gtctggcact aaatttctca gtcttttact atgagattct aaactctcct 240
gaaaaggcct gtagcctggc aaaaacggca tttgatgaag caattgctga attggatacg 300
ctgaatgaag agtcttataa agacagcact ctgatcatgc agttacttag ggacaattca 360
ctctgtggac atcggaatac cagggagacg aaggagacgc tggggaggga gagaactaat 420
gtttctcgtg ctttgtgatc tgttcagtgt cactctgtac cctcaacata tatcccttgt 480
gcgataaaaa aaaanaaaaa aaaaacnctc ngggggggcc ccggancccn attccccct 539

<210> 30
<211> 568
<212> DNA
<213> Homo sapiens

<220>
<221> unsure
<222> 274, 278, 283, 291, 308, 314, 324, 326, 327, 331, 341, 355,
371, 419, 461, 531, 534, 545, 558
<223> a or c or g or t

<400> 30
attccaaacc aagtagtgct tgtcagccct cttaactctg tgcacgccct atttcagtct 60
tttacatttg ttcttctagg gaatgtatgc atctctatat atattttccc tctcaaaacc 120
agaacatcaa cagtgtctgt tctgacactt cagacatccc acgcaaagcc acattgaatt 180
tttgccaaat gaaaaacaca tccacaatca agttctaaga ggggtgtcaag tgggggaatt 240
taatattgtt tattattcaa aaatttagtt tatnaaangg aancaaaacc ntigaacctt 300
ttttccnnaa aaanaaggaa aatntnntgt ngaccaaggg ncgaacctga atccnccttg 360
aaaaattgtt ntctcagaaa ggaaaagcgc cctccagttc ttttacccca agaatttana 420
aaaatttggc ccaagatttt atatgttcag ttgtttatgt ntaaaaaataa ctttctggat 480
tttgtggggg aggaccggaa aaggaaggga gtttattcct atgttatata ntanaaactt 540

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cccnataaa atgccatnga tgggttga 568

<210> 31
 <211> 315
 <212> DNA
 <213> Homo sapiens

<400> 31
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 ccaaaaaagg aggtggctct aagtaaaaact gggattggac agtagtggg catctgggtcc 120
 ttgccgcctg agagccccag gagacatcgg ctagagtgc catggctatg ctcccgtctg 180
 gaagatgccg gcatctggcc tcccactgtt ttcagctgtg tccccagtc cgtgtctttt 240
 tagaatgtga atgatgataa agttgtgaaa taaagggttc tatctagttt gtaaaaaaaa 300
 aaaaaaaaaa aaaaa 315

<210> 32
 <211> 458
 <212> DNA
 <213> Homo sapiens

<220>
 <221> unsure
 <222> 342, 355, 365, 368, 375, 381, 385, 414, 445
 <223> a or c or g or t

<400> 32
 aattcaagga actttacatt gtaagagaaa acaaaacact gcaaaagaag tgtgccgact 60
 atcaaataaa tgggtgaaatc atctgcaaat gtggccaggc ttggggaaca atgatgggtgc 120
 acaaaggctt agatttgctt tgtctcaaaa taagggaattt tgtagtgggtt ttcaaaaaata 180
 attcaacaaa gaaacaatac aaaaagtggg tagaattacc tatcacattt cccaatcttg 240
 actattcaga atgctgttta tttagtgtatg aggattagca cttgattgaa gattctttta 300
 aaatactatc agttaaacat ttaatatgat tatgattaat gnattcatta tgctncagac 360
 tgacntanga atcantaaaa ngatngtttt actctgcaaa aaaaaaaaaa aacncggggg 420
 gggggcccggc cccaatttcc ccttntgggg ggggggttt 458

<210> 33
 <211> 470
 <212> DNA
 <213> Homo sapiens

<220>
 <221> unsure
 <222> 434, 459, 460
 <223> a or c or g or t

<400> 33
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 gaccgagctt tgttgtttag cctaagagaa gatttatgta gtaatttctt ctcaaggatg 180
 gaaccacggt cataactaac atgttggcca gaatagaacc actggttaaa catattttat 240
 tcaccattaa gtgatcttta tcaatatctt ggattagaca acaaattacc tttctgggtg 300
 tttcttgtaa actatactcc tgtttgaatg ttaaaactttg ttgctaaagt ttaattttta 360
 gatgtttgaa tgttcagttt atgtatttga actacaataa accaaccctt tttatataaa 420
 aaaaaaaaaa aacntcgagg gggggcccgg cccaattnn ccctataggg 470

<210> 34
 <211> 261
 <212> DNA
 <213> Homo sapiens

<400> 34
 aattcgaact gtgtgtatgt cagtggaaatc aaatcaaaag ccactaacat ggctgtctgt 60
 ttcactggac tgtcccatct gctgggttaa aggattgggg cccaatcct ctggcctagc 120

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atttctcagt gtttgctatt cagactgtct aaatacagca tgtgacaagc tgaagaagcc 180
 aaatctagca gtcatcttctg atttcattat attctccccc tcttcctgct aaaaagacaa 240
 aaaacaaaaa aaaaaaaaaa a 261

<210> 35
 <211> 309
 <212> DNA
 <213> Homo sapiens

<400> 35
 aattcggcac gagctggaca ccaacagtga tggtcagcta gatttctcag aatttcttaa 60
 tctgattggg ggcctagcta tggcttgcca tgactccttc ctcaaggctg tcccttccca 120
 gaagcggacc tgaggacccc ttggccctgg ccttcaaacc ccccccttt ccttccagcc 180
 tttctgtcat catctccaca gcccacccat cccctgagca cactaaccac ctcatgcagg 240
 ccccacctgc caatagtaat aaagcaatgt cactttttta aaacatgaaa aaaaaaaaaa 300
 aaaaaaaaaa 309

<210> 36
 <211> 243
 <212> DNA
 <213> Homo sapiens

<220>
 <221> unsure
 <222> 8
 <223> a or c or g or t

<400> 36
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 ttctgtagct caggagagca cccctccacc ccatttgctc gcagtatcct agaattcttg 120
 tgctctcgct gcagttccct ttgggttcca tgttttcctt gttccctccc atgccttagct 180
 ggattgcaga gttaagttta tgattatgaa ataaaaacta aataacaaaa aaaaaaaaaa 240
 aaa 243

<210> 37
 <211> 650
 <212> DNA
 <213> Homo sapiens

<220>
 <221> unsure
 <222> 546, 553, 573
 <223> a or c or g or t

<400> 37
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 ttccgtgtga acttgctgc agaaccagc gtgctttgaa gcaatgttgt gggacactac 120
 cacaagcccc ttctggaaaag gatgcagaaa agaccccagc agttagcatt tcttgtttag 180
 aacttagtaa caatctagag aagaagccca ggaggactaa agctgaaaac atccctgctg 240
 ttgtgataga gattaaaaac atgccaaaca aacaacctga atcatctttg tgagtcttga 300
 aaaagatgtg atatttgact ttgtctttaa actgcaagag gaaaaagact ccactgaaat 360
 tctaagtittg ccaagtagtg taattgaagt ccttgtctgg tcacacagtt taattctatt 420
 tttgtaagaa cataatggga ctgcataaca gagttctata ttacaatttt gtgattatta 480
 gtacagagta cagctatgct gtgactgttt tggaaagcca gttttaacac tatgttacat 540
 ttttgnntaa agnaagttaa accttatata acntaatgac atttgatttc tggattttcc 600
 catgataaaa aattaggggg gataaataaa aatggttact ggaatttcaa 650

<210> 38
 <211> 687
 <212> DNA
 <213> Homo sapiens

<220>

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<221> unsure
 <222> 444, 448, 451, 460, 461, 462, 468, 471, 476, 490, 506, 510,
 514, 522, 524, 535, 550, 563, 567, 568, 573, 579, 587, 590
 <223> a or c or g or t

<221> unsure
 <222> 592, 593, 596, 608, 615
 <223> a or c or g or t

<400> 38
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 cctcaggcag atcatttctga gtgtgctgag gtgtgtgcac atgttacaaa ggcaactacc 120
 atgttaataa aatatttcaat ttgaaatcct tttcgggtatt tgaattgctt ttgaataatg 180
 ttttttatct ggatgtaaca ttgttgcat agcttttttaa ctttcccaag taattgaata 240
 cattttatta cttggacttt tataaactct ttccctaccc actataaatg agacattcac 300
 agcgttcaag ttgtatttaa aggaaaaggat tagtttgacc ctttcttttg atgggttaatg 360
 catacatgca gttaaattccc tttatgcaaa tgtgacactg ctttactagg tcttttagtt 420
 atttatttat tttttttttt ttgnccantt nattttttan nntaatttnt naaacncatt 480
 attttttttt aaaaataaaaa aacacnactn tttnttttta ananttaaac cttantaaat 540
 ttttcccccn aaaaaaaatc ccntaanntt ttnaatttnt tgaattnaan annaantaaa 600
 ctttttttaa aaccnggcaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 660
 aaaaaaaaaa aaaaaaaaaa aaaaaaaa 687

<210> 39
 <211> 2549
 <212> DNA
 <213> Homo sapiens

<400> 39
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 ctatggagta gcgcagggtc tcgagctgtg gccgtggact taggcaacag gaaattagaa 120
 atatcttctg gaaagctggc cagatttgca gatggctctg ctgtagtaca gtcagggtgac 180
 actgcagtaa tggctacagc ggtcagtaaa acaaaacctt ccccttccca gtttatgcct 240
 ttggtgggtg actacagaca aaaagctgtg gcagcaggta gaattcccac aaactatctg 300
 agaagagagg ttggtacttc tgataaagaa attctaaca gtcgaataat agatcgttca 360
 attagaccgc tctttccagc tggctacttc tatgatacac aggttctgtg taatctgtta 420
 gcagtagatg gtgtaaatga gcctgatgtc ctagcaatta atggcgcttc cgtagccctc 480
 tcattatcag atattccttg gaatggacct gttggggcag tacgaatagg aataattgat 540
 ggagaatatg ttgttaaccc aacaagaaaa gaaatgtctt ctagtacttt aaatttagtg 600
 gttgctggag caccataaaag tcagattgtc atgttggag cctctgcaga gaacatttta 660
 cagcaggact tttgccatgc tatcaaagt ggagtgaaat ataccaca aataattcag 720
 ggcattcagc agttggtaaa agaaactggg gttaccaaga ggacacctca gaagttattt 780
 accccttcgc cagagattgt gaaatatact cataaacttg ctatggagag actctatgca 840
 gtttttacag attacgagca tgacaaagtt tccagagatg aagctgttaa caaaataaga 900
 ttagatacgg aggaacaact aaaagaaaaa tttccagaag ccgatccata tgaaataata 960
 gaatccttca atgttgttgc aaagggaagt tttagaagta ttgttttgaa tgaatacaaa 1020
 aggtgctgat gtcgggattt gacttcactt aggaatgtaa gttgtgaggt agatatgttt 1080
 aaaacccttc atggatcagc attatttcaa agaggacaaa cacagggtgt ttgtaccgtt 1140
 acatttgatt cattagaatc tgggtattaag tcagatcaag ttataacagc tataaatggg 1200
 ataaaagata aaaatttcat gctgcactac gagtttcctc cttatgcaac taatgaaatt 1260
 ggcaaagtca ctggttttaa tagaagagaa cttgggcatg gtgctcttgc tgagaaagct 1320
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 gagtcaaatg ggtcatcttc tatggcatct gcatgtggcg gaagtttagc attaatggat 1440
 tcaggggttc caatttcac tgctgttgca ggcgtagcaa taggattggc caccaaaacc 1500
 gatcctgaga aggggtgaaat agaagattat cgtttgctga cagatatatt gggaattgaa 1560
 gattacaatg gtgacatgga cttcaaaata gctggcacta ataaaggaat aactgcatta 1620
 caggctgata ttaaattacc tggaaataca ataaaaattg tgatggaggc tattcaacaa 1680
 gcttcagtgg caaaaaagga gatattacag atcatgaaca aaactatttc aaaacctcga 1740
 gcatctagaa aagaaaatgg acctgttgta gaaactgttc aggttccatt atcaaaacga 1800
 gcaaaatttg ttggacctgg tggctataac ttaaaaaaac ttcaggctga aacagggtga 1860
 actattagtc aggtggatga agaaacgttt tctgtatttg caccaacacc cagtgttatg 1920
 catgaggcaa gagacttcat tactgaaatc tgcaaggatg atcaggagca gcaattagaa 1980
 tttggagcag tatataccgc cacaataact gaaatcagag atactggtgt aatggtaaaa 2040

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```

ttatatccaa atatgactgc ggtactgctt cataacacac aacttgataa cgaaagatta 2100
aacatcctac tgcccttagga ttagaagttg gccagaaat tcaggtgaaa tactttggac 2160
gtgacccagc cgatggaaga atgaggcttt ctcgaaaagt gcttcagtcg ccagctacaa 2220
ccgtgggtcag aactttgaat gacagaagta gtattgtaat gggagaaact atttcacagt 2280
catcatctaa ttctcagtga tttttttttt ttaaagagaa ttctagaatt ctattttgtc 2340
taggggtgatg tgctgtagag caacatttta gtagatcttc cattgtgtag atttctatat 2400
aatataaata cattttaatt atttgtacta aaatgctcat ttacatgtgc cattttttta 2460
attcgagtaa cccatatttg ttttaattga ttacattat aaatcaagaa atatttatta 2520
ttaaagtaa gtcatttata catcttaga 2549

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<210> 40
 <211> 650
 <212> DNA
 <213> Homo sapiens

```

<400> 40
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cattacaggc tgatattaaa ttacctggaa taccaataaa aattgtgatg gaggctattc 120
aacaagcttc agtggcaaaa aaggagatat tacagatcat gaacaaaact atttcaaaac 180
ctcgagcatc tagaaaagaa aatggacctg ttgtagaaac tggtcagggt ccattatcaa 240
aacgagcaaa atttgttggg cctgggtggc ataacttaaa aaaacttcag gctgaaacag 300
gtgtaacctat tagtcagggtg gatgaagaaa cgttttctgt atttgacca acacccagtg 360
ttatgcatga ggcaagaaga cttcattact gaatctgcaa ggatgatcag gagcagcaat 420
tagaatttgg agcagtatat accgccacaa taactgaaat cagagatact ggtgtaatgg 480
taaaattata tccaaatatg actgcggtac tgcttcataa cacacaactt gataacgaaa 540
gattaacat cctactgccc taggattaga agttggccaa gaaattcagg tgaaatactt 600
tggacgtgac ccagccgatg gaagaatgag gctttctcga aaagtgcctc 650

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<210> 41
 <211> 640
 <212> DNA
 <213> Mus musculus

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<400> 41
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gatattaagt tacctggagt accaattaaa attataatgg aagccatcca acaagcgtca 120
gtggcaaaaga aggagatact gcagataatg aacaaaacga ttcaaaaacc tcgagcatca 180
agaaaagaaa atggaccagt tgtagaaaca gtaaagggtc cattatcaaa acgagcaaaa 240
ttcgttgggc ctggtggata tcacttaaaa aaactccagg ctgagacagg tgtaacaatt 300
agtcagggtg atgaagaaac cttctccata ttgaccaa cacctactgc aatgcatgaa 360
gcaagagatt tcattacaga aatttgcaga gatgatcaag agcaacaatt agaatttggg 420
gcagtttata ccgcgacaat aactgaaatc agagacactg gagtgatggg aaaactgtat 480
ccaaacatga ctgcagtgtc gcttcataat tcacaacttg accaacgaaa gattaacat 540
cccactgccc taggactaga gggtggccaa gaaattcagg tcaaatactt tggccgtgat 600
ccagctgatg gaagaatgag gctttctcgt aaagtacttc 640

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<210> 42
 <211> 705
 <212> PRT
 <213> Homo sapiens

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<400> 42
Asp Gly Pro Phe Leu Leu Pro Arg Arg Asp Arg Ala Leu Thr Gln Leu
 1           5           10          15
Gln Val Arg Ala Leu Trp Ser Ser Ala Gly Ser Arg Ala Val Ala Val
          20          25          30
Asp Leu Gly Asn Arg Lys Leu Glu Ile Ser Ser Gly Lys Leu Ala Arg
          35          40          45
Phe Ala Asp Gly Ser Ala Val Val Gln Ser Gly Asp Thr Ala Val Met
          50          55          60
Val Thr Ala Val Ser Lys Thr Lys Pro Ser Pro Ser Gln Phe Met Pro
 65          70          75          80
Leu Val Val Asp Tyr Arg Gln Lys Ala Ala Ala Gly Arg Ile Pro

```

85

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Val Gln Val Pro Leu Ser Lys Arg Ala Lys Phe Val Gly Pro Gly Gly
 595 600 605
 Tyr Asn Leu Lys Lys Leu Gln Ala Glu Thr Gly Val Thr Ile Ser Gln
 610 615 620
 Val Asp Glu Glu Thr Phe Ser Val Phe Ala Pro Thr Pro Ser Val Met
 625 630 635 640
 His Glu Ala Arg Asp Phe Ile Thr Glu Ile Cys Lys Asp Asp Gln Glu
 645 650 655
 Gln Gln Leu Glu Phe Gly Ala Val Tyr Thr Ala Thr Ile Thr Glu Ile
 660 665 670
 Arg Asp Thr Gly Val Met Val Lys Leu Tyr Pro Asn Met Thr Ala Val
 675 680 685
 Leu Leu His Asn Thr Gln Leu Asp Asn Glu Arg Leu Asn Ile Leu Leu
 690 695 700
 Pro
 705

<210> 43

<211> 705

<212> PRT

<213> Bacillus subtilis

<400> 43

Met Gly Gln Glu Lys His Val Phe Thr Ile Asp Trp Ala Gly Arg Thr
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 20 25 30
 Met Ile Arg Tyr Gly Asp Thr Ala Val Leu Ser Thr Ala Thr Ala Ser
 35 40 45
 Lys Glu Pro Lys Pro Leu Asp Phe Phe Pro Leu Thr Val Asn Tyr Glu
 50 55 60
 Glu Arg Leu Tyr Ala Val Gly Lys Ile Pro Gly Gly Phe Ile Lys Arg
 65 70 75 80
 Glu Gly Arg Pro Ser Glu Lys Ala Val Leu Ala Ser Arg Leu Ile Asp
 85 90 95
 Arg Pro Ile Arg Pro Leu Phe Ala Asp Gly Phe Arg Asn Glu Val Gln
 100 105 110
 Val Ile Ser Ile Val Met Ser Val Asp Gln Asn Cys Ser Ser Glu Met
 115 120 125
 Ala Ala Met Phe Gly Ser Ser Leu Ala Leu Ser Val Ser Asp Ile Pro
 130 135 140
 Phe Glu Gly Pro Ile Ala Gly Val Thr Val Gly Arg Ile Asp Asp Gln
 145 150 155 160
 Phe Ile Ile Asn Pro Thr Val Asp Gln Leu Glu Lys Ser Asp Ile Asn
 165 170 175
 Leu Val Val Ala Gly Thr Lys Asp Ala Ile Asn Met Val Glu Ala Gly
 180 185 190
 Ala Asp Glu Val Pro Glu Glu Ile Met Leu Glu Ala Ile Met Phe Gly
 195 200 205
 His Glu Glu Ile Lys Arg Leu Ile Ala Phe Gln Glu Glu Ile Val Ala
 210 215 220
 Ala Val Gly Lys Glu Lys Ser Glu Ile Lys Leu Phe Glu Ile Asp Glu
 225 230 235 240
 Glu Leu Asn Glu Lys Val Lys Ala Leu Ala Glu Glu Asp Leu Leu Lys
 245 250 255
 Ala Ile Gln Val His Glu Lys His Ala Arg Glu Asp Ala Ile Asn Glu
 260 265 270
 Val Lys Asn Ala Val Val Ala Lys Phe Glu Asp Glu Glu His Asp Glu
 275 280 285
 Asp Thr Ile Lys Gln Val Lys Gln Ile Leu Ser Lys Leu Val Lys Asn
 290 295 300
 Glu Val Arg Arg Leu Ile Thr Glu Glu Lys Val Arg Pro Asp Gly Arg

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```

305      310      315      320
Gly Val Asp Gln Ile Arg Pro Leu Ser Ser Glu Val Gly Leu Leu Pro
325      330      335
Arg Thr His Gly Ser Gly Leu Phe Thr Arg Gly Gln Thr Gln Ala Leu
340      345      350
Ser Val Cys Thr Leu Gly Ala Leu Gly Asp Val Gln Ile Leu Asp Gly
355      360      365
Leu Gly Val Glu Glu Ser Lys Arg Phe Met His His Tyr Asn Phe Pro
370      375      380
Gln Phe Ser Val Gly Glu Thr Gly Pro Met Arg Gly Pro Gly Arg Arg
385      390      395      400
Glu Ile Gly His Gly Ala Leu Gly Glu Arg Ala Leu Glu Pro Val Ile
405      410      415
Pro Ser Glu Lys Asp Phe Pro Tyr Thr Val Arg Leu Val Ser Glu Val
420      425      430
Leu Glu Ser Asn Gly Ser Thr Ser Gln Ala Ser Ile Cys Ala Ser Thr
435      440      445
Leu Ala Met Met Asp Ala Gly Val Pro Ile Lys Ala Pro Val Ala Gly
450      455      460
Ile Ala Met Gly Leu Val Lys Ser Gly Glu His Tyr Thr Val Leu Thr
465      470      475      480
Asp Ile Gln Gly Met Glu Asp Ala Leu Gly Asp Met Asp Phe Lys Val
485      490      495
Ala Gly Thr Glu Lys Gly Val Thr Ala Leu Gln Met Asp Ile Lys Ile
500      505      510
Glu Gly Leu Ser Arg Glu Ile Leu Glu Glu Ala Leu Gln Gln Ala Lys
515      520      525
Lys Gly Arg Met Glu Ile Leu Asn Ser Met Leu Ala Thr Leu Ser Glu
530      535      540
Ser Arg Lys Glu Leu Ser Arg Tyr Ala Pro Lys Ile Leu Thr Met Thr
545      550      555      560
Ile Asn Pro Asp Lys Ile Arg Asp Val Ile Gly Pro Ser Gly Lys Gln
565      570      575
Ile Asn Lys Ile Ile Glu Glu Thr Gly Val Lys Ile Asp Ile Glu Gln
580      585      590
Asp Gly Thr Ile Phe Ile Ser Ser Thr Asp Glu Ser Gly Asn Gln Lys
595      600      605
Ala Lys Lys Ile Ile Glu Asp Leu Val Arg Glu Val Glu Val Gly Gln
610      615      620
Leu Tyr Leu Gly Lys Val Lys Arg Ile Glu Lys Phe Gly Ala Phe Val
625      630      635      640
Glu Ile Phe Ser Gly Lys Asp Gly Leu Val His Ile Ser Glu Leu Ala
645      650      655
Leu Glu Arg Val Gly Lys Val Glu Asp Val Val Lys Ile Gly Asp Glu
660      665      670
Ile Leu Val Lys Val Thr Glu Ile Asp Lys Gln Gly Arg Val Asn Leu
675      680      685
Ser Arg Lys Ala Val Leu Arg Glu Glu Lys Glu Lys Glu Glu Gln Gln
690      695      700
Ser
705

```

<210> 44
 <211> 705
 <212> PRT
 <213> Homo sapiens

<400> 44
 Asp Gly Pro Phe Leu Leu Pro Arg Arg Asp Arg Ala Leu Thr Gln Leu
 1 5 10 15
 Gln Val Arg Ala Leu Trp Ser Ser Ala Gly Ser Arg Ala Val Ala Val
 20 25 30

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| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Leu | Gly | Asn | Arg | Lys | Leu | Glu | Ile | Ser | Ser | Gly | Lys | Leu | Ala | Arg |
| | | 35 | | | | | 40 | | | | | 45 | | | |
| Phe | Ala | Asp | Gly | Ser | Ala | Val | Val | Gln | Ser | Gly | Asp | Thr | Ala | Val | Met |
| | 50 | | | | | 55 | | | | | 60 | | | | |
| Val | Thr | Ala | Val | Ser | Lys | Thr | Lys | Pro | Ser | Pro | Ser | Gln | Phe | Met | Pro |
| 65 | | | | | 70 | | | | | 75 | | | | 80 | |
| Leu | Val | Val | Asp | Tyr | Arg | Gln | Lys | Ala | Ala | Ala | Ala | Gly | Arg | Ile | Pro |
| | | | | 85 | | | | | 90 | | | | | 95 | |
| Thr | Asn | Tyr | Leu | Arg | Arg | Glu | Val | Gly | Thr | Ser | Asp | Lys | Glu | Ile | Leu |
| | | | 100 | | | | | 105 | | | | | 110 | | |
| Thr | Ser | Arg | Ile | Ile | Asp | Arg | Ser | Ile | Arg | Pro | Leu | Phe | Pro | Ala | Gly |
| | | 115 | | | | | 120 | | | | | 125 | | | |
| Tyr | Phe | Tyr | Asp | Thr | Gln | Val | Leu | Cys | Asn | Leu | Leu | Ala | Val | Asp | Gly |
| | 130 | | | | | 135 | | | | | 140 | | | | |
| Val | Asn | Glu | Pro | Asp | Val | Leu | Ala | Ile | Asn | Gly | Ala | Ser | Val | Ala | Leu |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 |
| Ser | Leu | Ser | Asp | Ile | Pro | Trp | Asn | Gly | Pro | Val | Gly | Ala | Val | Arg | Ile |
| | | | | 165 | | | | | 170 | | | | | 175 | |
| Gly | Ile | Ile | Asp | Gly | Glu | Tyr | Val | Val | Asn | Pro | Thr | Arg | Lys | Glu | Met |
| | | | 180 | | | | | 185 | | | | | 190 | | |
| Ser | Ser | Ser | Thr | Leu | Asn | Leu | Val | Val | Ala | Gly | Ala | Pro | Lys | Ser | Gln |
| | | 195 | | | | | 200 | | | | | 205 | | | |
| Ile | Val | Met | Leu | Glu | Ala | Ser | Ala | Glu | Asn | Ile | Leu | Gln | Gln | Asp | Phe |
| | 210 | | | | | 215 | | | | | 220 | | | | |
| Cys | His | Ala | Ile | Lys | Val | Gly | Val | Lys | Tyr | Thr | Gln | Gln | Ile | Ile | Gln |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 |
| Gly | Ile | Gln | Gln | Leu | Val | Lys | Glu | Thr | Gly | Val | Thr | Lys | Arg | Thr | Pro |
| | | | | 245 | | | | | 250 | | | | | 255 | |
| Gln | Lys | Leu | Phe | Thr | Pro | Ser | Pro | Glu | Ile | Val | Lys | Tyr | Thr | His | Lys |
| | | | 260 | | | | | 265 | | | | | 270 | | |
| Leu | Ala | Met | Glu | Arg | Leu | Tyr | Ala | Val | Phe | Thr | Asp | Tyr | Glu | His | Asp |
| | | 275 | | | | | 280 | | | | | 285 | | | |
| Lys | Val | Ser | Arg | Asp | Glu | Ala | Val | Asn | Lys | Ile | Arg | Leu | Asp | Thr | Glu |
| | 290 | | | | | 295 | | | | | 300 | | | | |
| Glu | Gln | Leu | Lys | Glu | Lys | Phe | Pro | Glu | Ala | Asp | Pro | Tyr | Glu | Ile | Ile |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 |
| Glu | Ser | Phe | Asn | Val | Val | Ala | Lys | Glu | Val | Phe | Arg | Ser | Ile | Val | Leu |
| | | | | 325 | | | | | 330 | | | | | 335 | |
| Asn | Glu | Tyr | Lys | Arg | Cys | Asp | Gly | Arg | Asp | Leu | Thr | Ser | Leu | Arg | Asn |
| | | | 340 | | | | | 345 | | | | | 350 | | |
| Val | Ser | Cys | Glu | Val | Asp | Met | Phe | Lys | Thr | Leu | His | Gly | Ser | Ala | Leu |
| | | 355 | | | | | 360 | | | | | 365 | | | |
| Phe | Gln | Arg | Gly | Gln | Thr | Gln | Val | Leu | Cys | Thr | Val | Thr | Phe | Asp | Ser |
| | 370 | | | | | 375 | | | | | 380 | | | | |
| Leu | Glu | Ser | Gly | Ile | Lys | Ser | Asp | Gln | Val | Ile | Thr | Ala | Ile | Asn | Gly |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 |
| Ile | Lys | Asp | Lys | Asn | Phe | Met | Leu | His | Tyr | Glu | Phe | Pro | Pro | Tyr | Ala |
| | | | | 405 | | | | | 410 | | | | | 415 | |
| Thr | Asn | Glu | Ile | Gly | Lys | Val | Thr | Gly | Leu | Asn | Arg | Arg | Glu | Leu | Gly |
| | | | 420 | | | | | 425 | | | | | 430 | | |
| His | Gly | Ala | Leu | Ala | Glu | Lys | Ala | Leu | Tyr | Pro | Val | Ile | Pro | Arg | Asp |
| | | 435 | | | | | 440 | | | | | 445 | | | |
| Phe | Pro | Phe | Thr | Ile | Arg | Val | Thr | Ser | Glu | Val | Leu | Glu | Ser | Asn | Gly |
| | 450 | | | | | 455 | | | | | 460 | | | | |
| Ser | Ser | Ser | Met | Ala | Ser | Ala | Cys | Gly | Gly | Ser | Leu | Ala | Leu | Met | Asp |
| 465 | | | | | 470 | | | | | 475 | | | | 480 | |
| Ser | Gly | Val | Pro | Ile | Ser | Ser | Ala | Val | Ala | Gly | Val | Ala | Ile | Gly | Leu |
| | | | | 485 | | | | | 490 | | | | | 495 | |
| Val | Thr | Lys | Thr | Asp | Pro | Glu | Lys | Gly | Glu | Ile | Glu | Asp | Tyr | Arg | Leu |
| | | | 500 | | | | | 505 | | | | | 510 | | |
| Leu | Thr | Asp | Ile | Leu | Gly | Ile | Glu | Asp | Tyr | Asn | Gly | Asp | Met | Asp | Phe |
| | | 515 | | | | | 520 | | | | | 525 | | | |
| Lys | Ile | Ala | Gly | Thr | Asn | Lys | Gly | Ile | Thr | Ala | Leu | Gln | Ala | Asp | Ile |

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```

530          535          540
Lys Leu Pro Gly Ile Pro Ile Lys Ile Val Met Glu Ala Ile Gln Gln
545          550          555          560
Ala Ser Val Ala Lys Lys Glu Ile Leu Gln Ile Met Asn Lys Thr Ile
          565          570          575
Ser Lys Pro Arg Ala Ser Arg Lys Glu Asn Gly Pro Val Val Glu Thr
          580          585          590
Val Gln Val Pro Leu Ser Lys Arg Ala Lys Phe Val Gly Pro Gly Gly
          595          600          605
Tyr Asn Leu Lys Lys Leu Gln Ala Glu Thr Gly Val Thr Ile Ser Gln
          610          615          620
Val Asp Glu Glu Thr Phe Ser Val Phe Ala Pro Thr Pro Ser Val Met
625          630          635          640
His Glu Ala Arg Asp Phe Ile Thr Glu Ile Cys Lys Asp Asp Gln Glu
          645          650          655
Gln Gln Leu Glu Phe Gly Ala Val Tyr Thr Ala Thr Ile Thr Glu Ile
          660          665          670
Arg Asp Thr Gly Val Met Val Lys Leu Tyr Pro Asn Met Thr Ala Val
          675          680          685
Leu Leu His Asn Thr Gln Leu Asp Asn Glu Arg Leu Asn Ile Leu Leu
690          695          700
Pro
705

```

<210> 45

<211> 245

<212> PRT

<213> Artificial Sequence

<220>

<223> Consensus sequence between Homo sapiens OLD-35 and
Bacillus subtilis PNPase

<400> 45

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Asp Arg Leu Gly Leu Ala Ala Gly Gly Asp Thr Ala Val Thr Ala Pro
1          5          10          15
Pro Phe Pro Leu Val Tyr Ala Gly Ile Pro Arg Glu Ser Lys Leu Ser
          20          25          30
Arg Ile Asp Arg Ile Arg Pro Leu Phe Gly Gln Val Val Asp Ala Gly
          35          40          45
Ser Ala Leu Ser Ser Asp Ile Gly Pro Val Gly Ile Asp Asn Pro Thr
          50          55          60
Ser Asn Leu Val Val Ala Gly Lys Ile Met Glu Ala Ala Ala Ile Gly
65          70          75          80
Ile Val Gly Lys Lys Leu Phe Glu Leu Ala Glu Leu Glu Lys Glu Val
          85          90          95
Glu Val Arg Ile Glu Arg Asp Gly Arg Arg Ser Glu Val His Gly Ser
          100          105          110
Leu Phe Arg Gly Gln Thr Gln Leu Thr Leu Asp Lys Phe Met His Tyr
          115          120          125
Phe Pro Glu Gly Gly Arg Arg Glu Gly His Gly Ala Leu Glu Ala Leu
130          135          140
Pro Val Ile Pro Asp Phe Pro Thr Arg Ser Glu Val Leu Glu Ser Asn
145          150          155          160
Gly Ser Ser Ala Ser Cys Leu Ala Met Asp Gly Val Pro Ile Val Ala
          165          170          175
Gly Ala Gly Leu Val Glu Tyr Leu Thr Asp Ile Gly Glu Asp Gly Asp
          180          185          190
Met Asp Phe Lys Ala Gly Thr Lys Gly Thr Ala Leu Gln Asp Ile Lys
195          200          205
Gly Ile Glu Ala Gln Gln Ala Glu Ile Leu Met Thr Ser Arg Pro Thr
210          215          220

```

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Lys Gly Pro Gly Lys Glu Thr Gly Val Ile Thr Ser Ala Ile Gln Leu
 225 230 235 240
 Gly Val Lys Leu Glu
 245

<210> 46
 <211> 47
 <212> RNA
 <213> Homo sapiens

<400> 46
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<210> 47
 <211> 11
 <212> RNA
 <213> Homo sapiens

<400> 47
 uuuuuuuuuu a 11

<210> 48
 <211> 33
 <212> RNA
 <213> Homo sapiens

<400> 48
 uuuuuuuuuu auuuuuuuuu uuuuuuuuuu auu 33

<210> 49
 <211> 62
 <212> RNA
 <213> Homo sapiens

<400> 49
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 uu 62

<210> 50
 <211> 111
 <212> RNA
 <213> Homo sapiens

<400> 50
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 auuuuacauu aaauuuuuuu uuuuuuuuuu aagucuuuuu uacauuuuuu a 111

<210> 51
 <211> 34
 <212> RNA
 <213> Homo sapiens

<400> 51
 auuuuuuuuu uuuuuuuuuu auuuuuuuuu uuuu 34

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